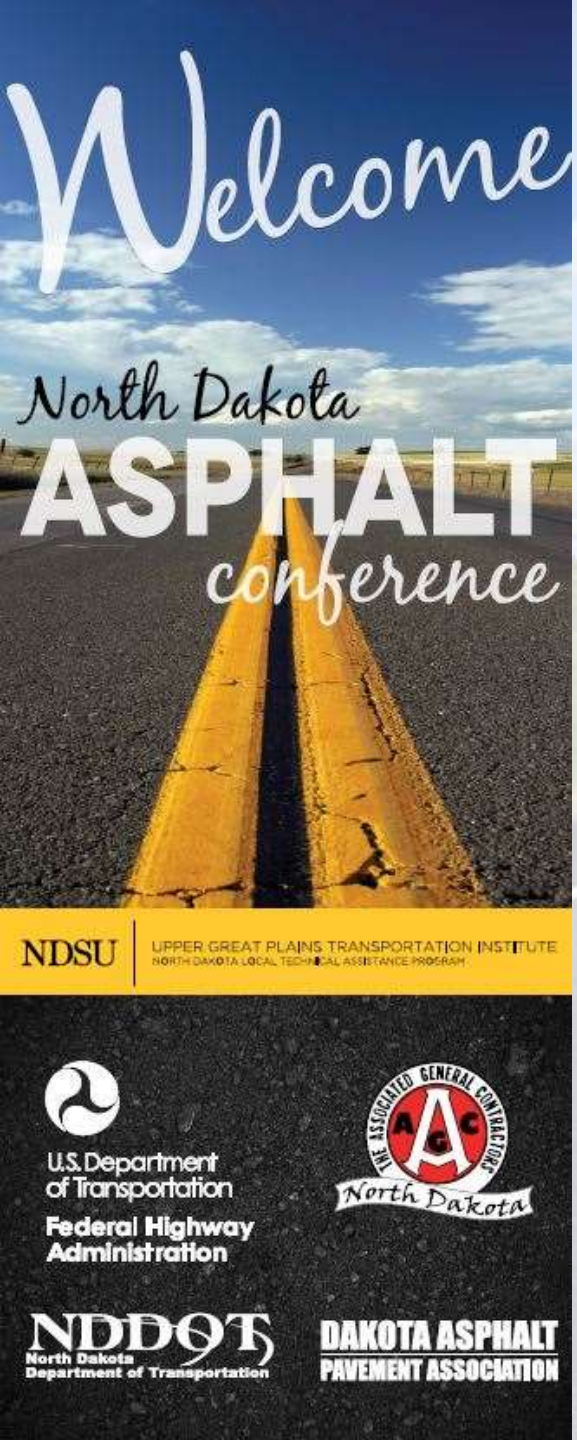


•Reinforcing HMA with Fibers

• Kevin Ageton - Pavement Preservation Products Manager with Brock White Construction Materials. He has been with the company for over 27 years.

BROCKWHITE
CONSTRUCTION MATERIALS

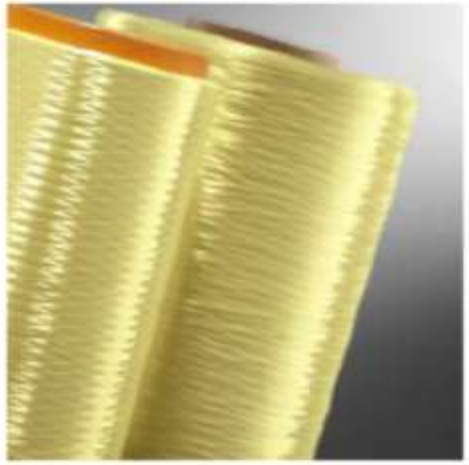
ACE FIBER

North Dakota Asphalt Conference

Bismarck, ND - April 10-11-2018

Fibers for HMA??? 

- Aramid fibers are more recognizable by their Trademarked name of KEVLAR
- Stronger than steel
- Reinforcing fibers in PCC has been around for a time now
- More recently fibers for HMA has evolved.



Aramid Fiber
(2.1 ounces/ton)

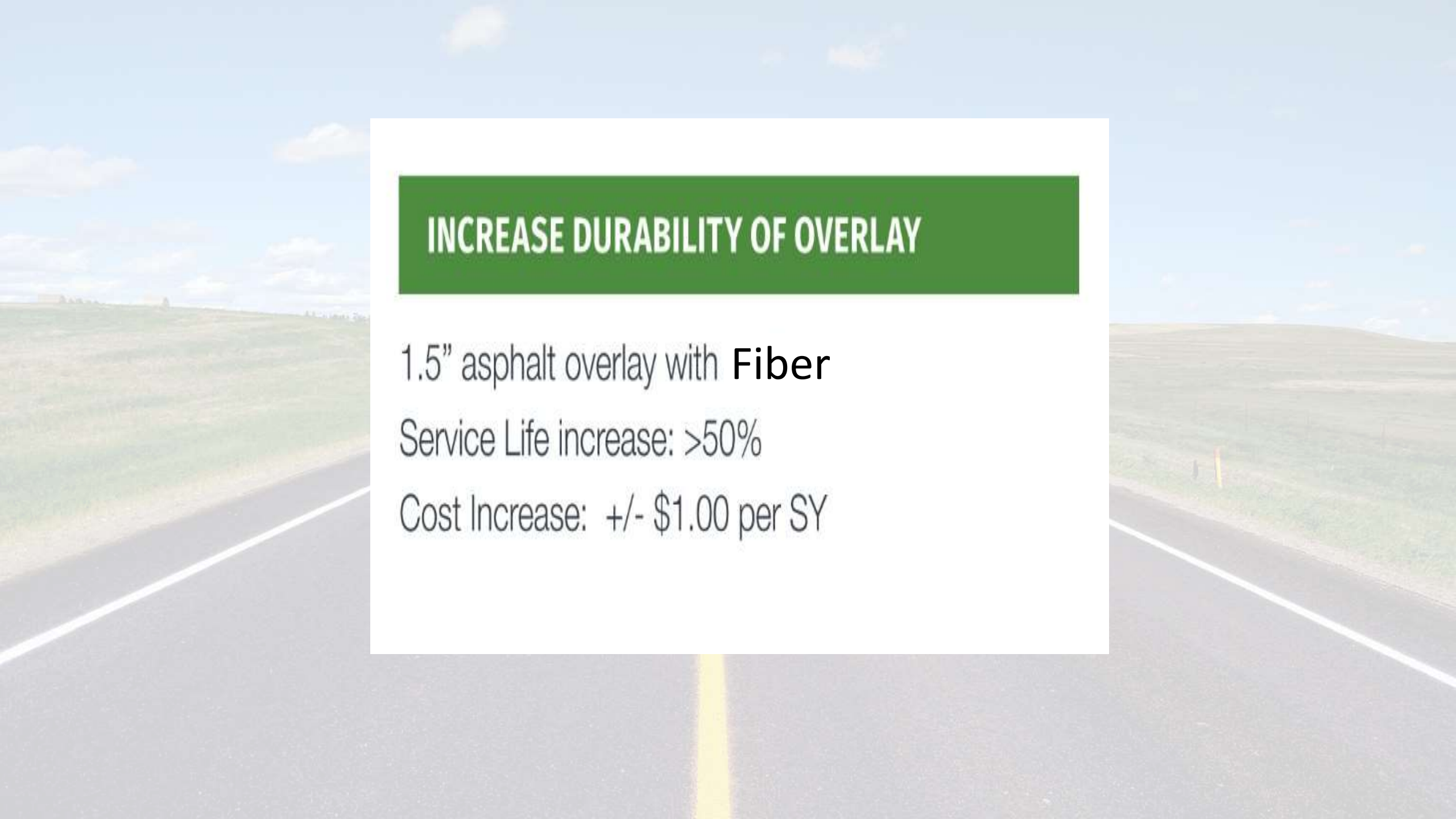
+

Sasobit® Wax
(2.1 ounces/ton)

=

Fiber
(4.2 ounces/ton)

Aramid Fibers in HMA



INCREASE DURABILITY OF OVERLAY

1.5” asphalt overlay with Fiber

Service Life increase: >50%

Cost Increase: +/- $1.00 per SY


IN LIEU OF REFLECTIVE CRACK INTERLAYERS
1.5” asphalt overlay with Fiber
Service Life increase: >50%
Cost Savings: $1-10 per SY

STRENGTHEN LIGHT DUTY PAVEMENTS

3.0” light duty asphalt with Fiber

ESAL increase: >160%

Cost Increase: +/- $2.00 per SY

IN LIEU OF POLYMER MODIFIED BINDER

1.5” asphalt overlay with Fiber

Equal Service Life BUT Easier Lay Down

Cost Neutral: $0.00 per SY

OPTIMIZE HEAVY DUTY PAVEMENTS

5.0” heavy duty asphalt with Fiber

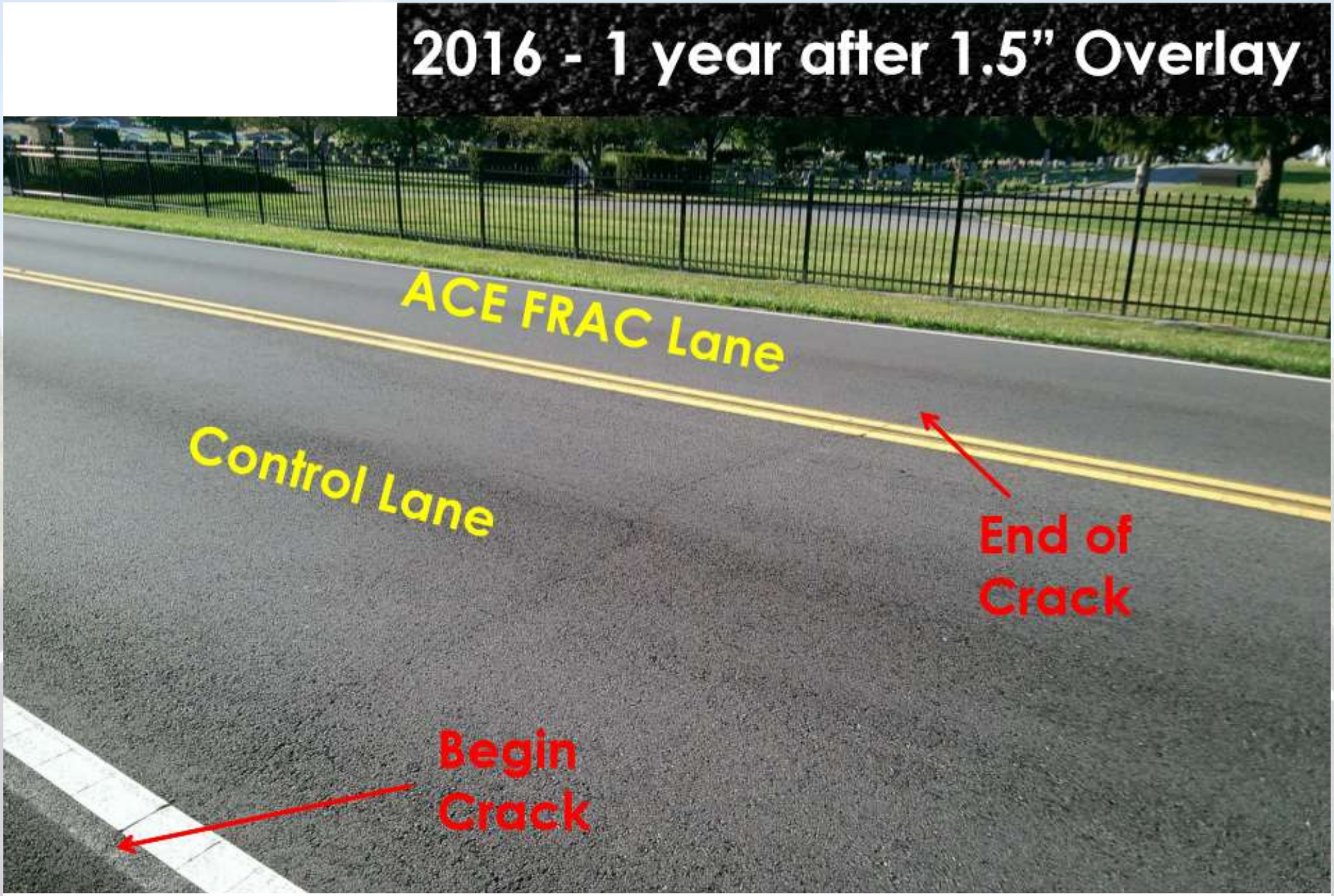
In-lieu of 6” w/o

ESAL increase: >40%

Cost Neutral: +/- $0.00 per SY


Sooo… DOES PUTTING LITTLE HAIR THINGS IN HMA….
REALY WORK???


Before – Prior
to 1.5" Overlay
Existing Crack
Across Both Lanes


2016 - 1 year after 1.5” Overlay
ACE FRAC Lane
Control Lane
End of Crack
Begin Crack

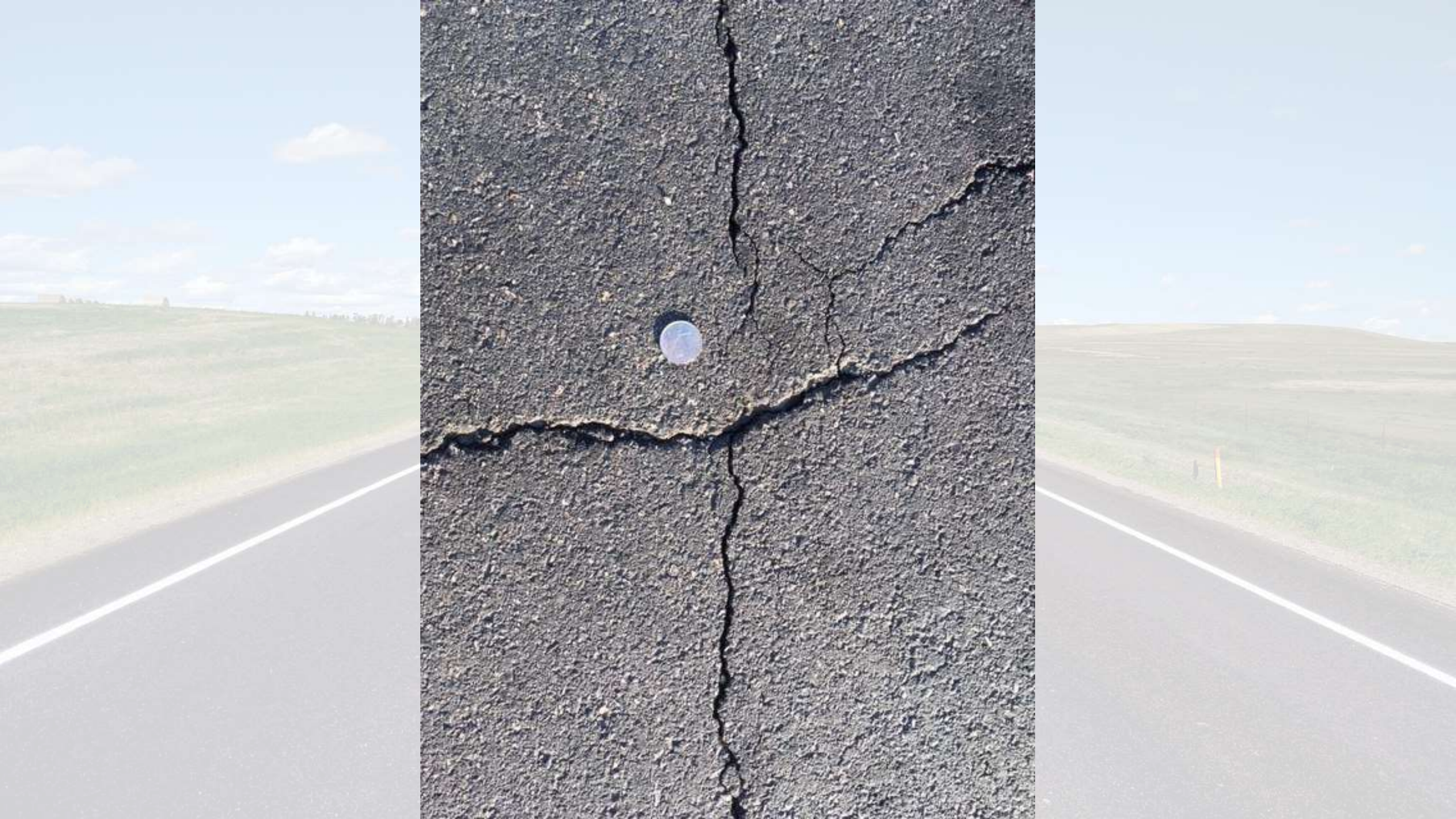
Aramid Fibers in North Dakota

- Test section constructed in the fall of 2015 on Cass County HWY 18 from 42nd street S.E. north to the railroad tracks
- Service road on the south side of I94 at Casselton. It's well signed for directions to the site
- The test was comparing various base treatments with various wear courses on top
- Chip Seals, Micro-Surfacing, ultra thin lift HMA
- Border States proposed a mix design using fibers
- Even though the literature states differently the entire south bound lane has fibers in it from the railroad tracks to the intersection
- The following pictures were taken on January 13th of 2018.


Donated by ARRA
and its proud members
Rock Solid Stabilization & Reclamation, Inc.
Lafarge Holcim
Industrial Builders, Inc.
Special thanks to non-member donations from
Border States Paving, Inc.
GCC of America
Astech Road Construction

The cracking pattern on the roadway

- The cracks in the north bound lane exhibit the characteristics we are used to in current pavements, wide open and jiggered.
- The cracks cross into the FRAC lane, come to a common point and then spread out in a much tighter almost predictable pattern
- This is somewhat comparable to “egg shell” cracking in CRC.
- The cracks in the FRAC lane probably wouldn’t fall into the maintenance program in most crack sealing programs.



Longitudinal common crack

- This crack in the pavement stumped me for a while.
- This is the point where the crack from the north bound lane continued into the south bound lane
- Looking closer it is apparent that this point is the edge of the screed from the paver so one might be able to deduce that the screed plays an important part in utilizing FRAC.

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